FIG.1

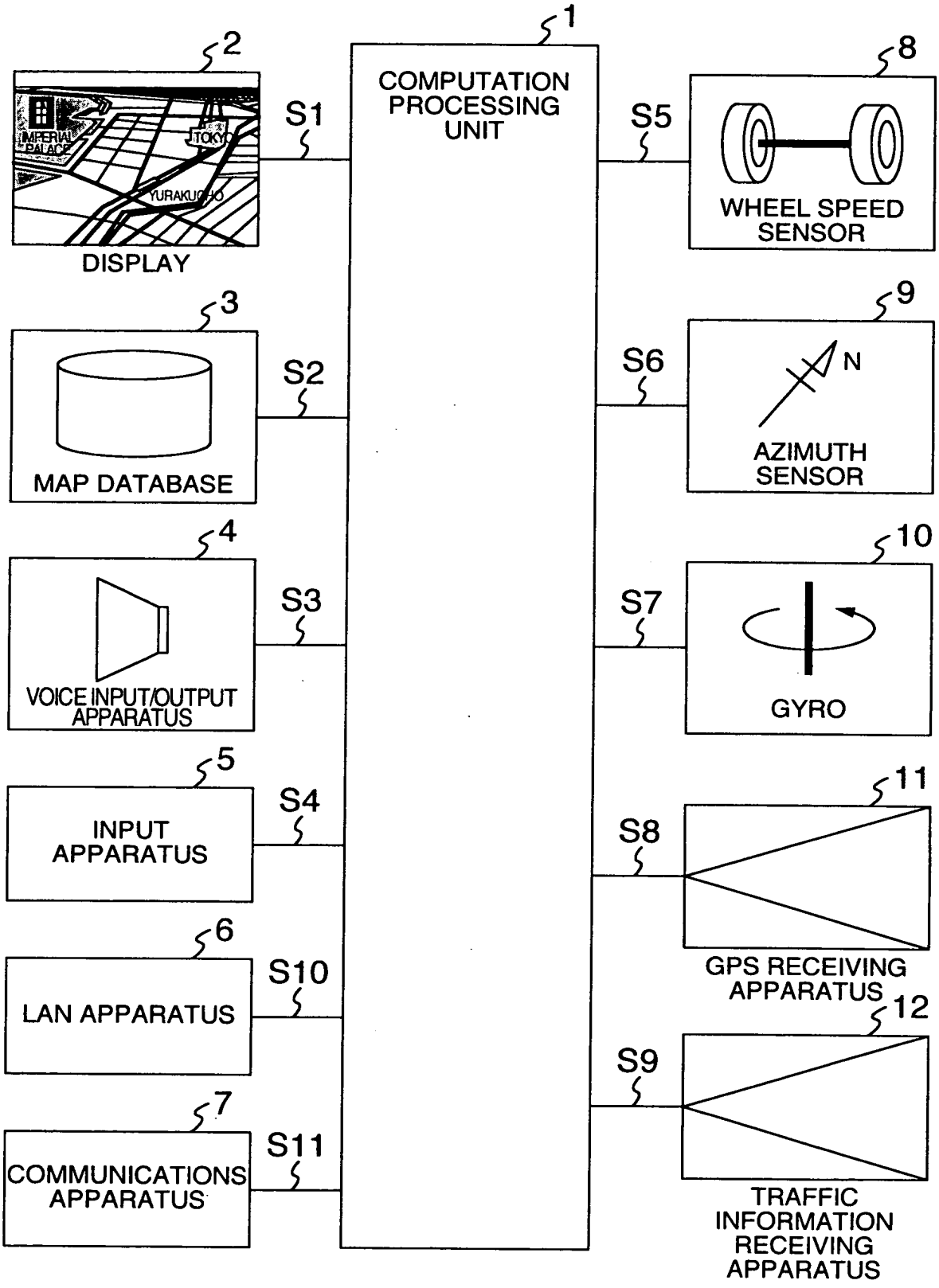

1
COMPUTATION PROCESSING UNIT
2
IMPERIAL PALACE
TOKYO
YURAKUCHO
DISPLAY
S1
3
MAP DATABASE
S2
4
VOICE INPUT/OUTPUT APPARATUS
S3
5
INPUT APPARATUS
S4
6
LAN APPARATUS
S10
7
COMMUNICATIONS APPARATUS
S11
8
WHEEL SPEED SENSOR
S5
9
N
AZIMUTH SENSOR
S6
10
GYRO
S7
11
GPS RECEIVING APPARATUS
S8
12
TRAFFIC INFORMATION RECEIVING APPARATUS
S9

FIG. 2

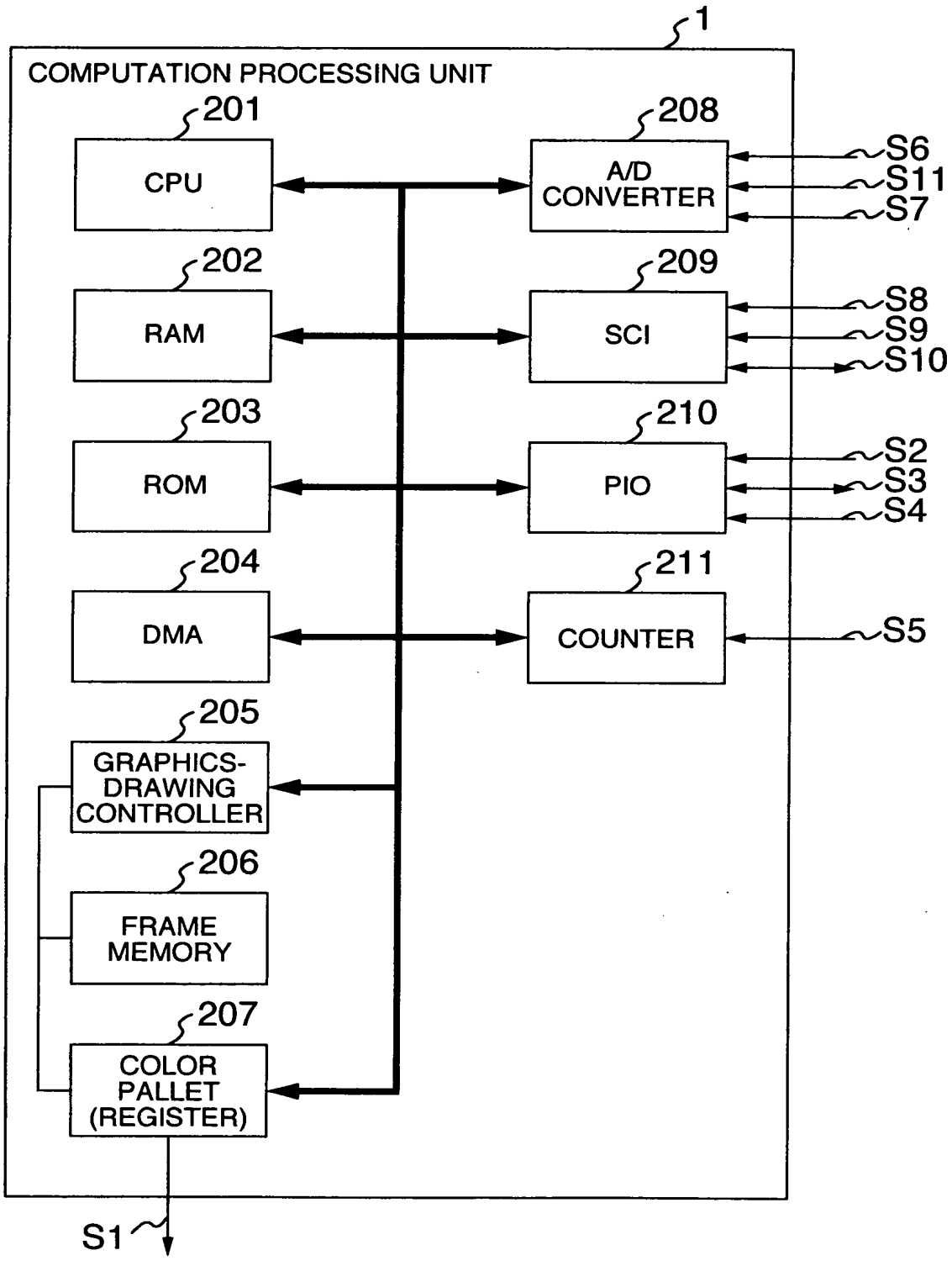

1
COMPUTATION PROCESSING UNIT
201
CPU
202
RAM
203
ROM
204
DMA
205
GRAPHICS-DRAWING CONTROLLER
206
FRAME MEMORY
207
COLOR PALLET (REGISTER)
208
A/D CONVERTER
209
SCI
210
PIO
211
COUNTER
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11

FIG. 3

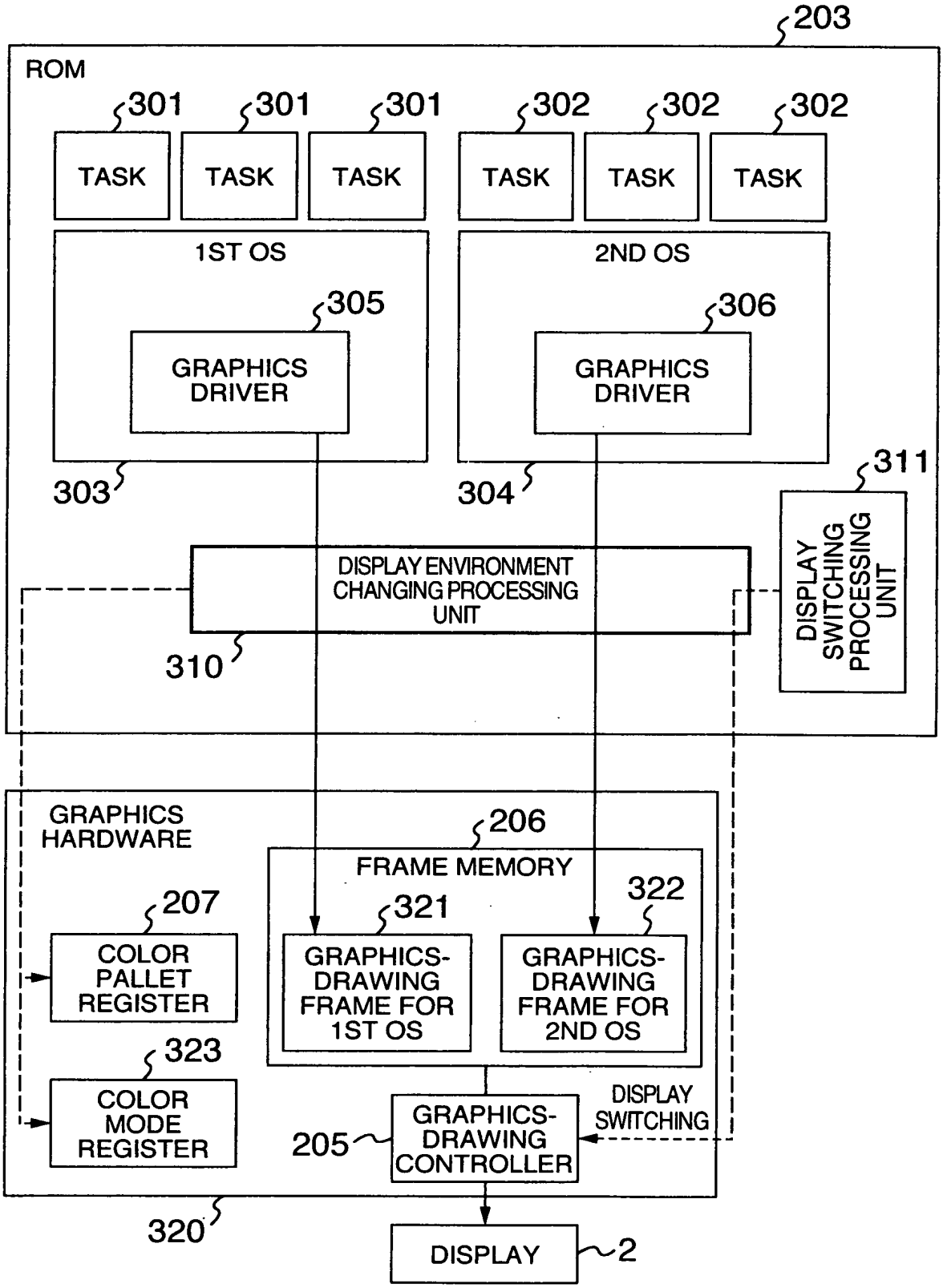

203
ROM
301
301
301
302
302
302
TASK
TASK
TASK
TASK
TASK
TASK
1ST OS
2ND OS
305
306
GRAPHICS DRIVER
GRAPHICS DRIVER
303
304
311
DISPLAY ENVIRONMENT CHANGING PROCESSING UNIT
DISPLAY SWITCHING PROCESSING UNIT
310
GRAPHICS HARDWARE
206
FRAME MEMORY
207
321
322
COLOR PALLET REGISTER
GRAPHICS-DRAWING FRAME FOR 1ST OS
GRAPHICS-DRAWING FRAME FOR 2ND OS
323
COLOR MODE REGISTER
205
GRAPHICS-DRAWING CONTROLLER
DISPLAY SWITCHING
320
DISPLAY
2

FIG. 4

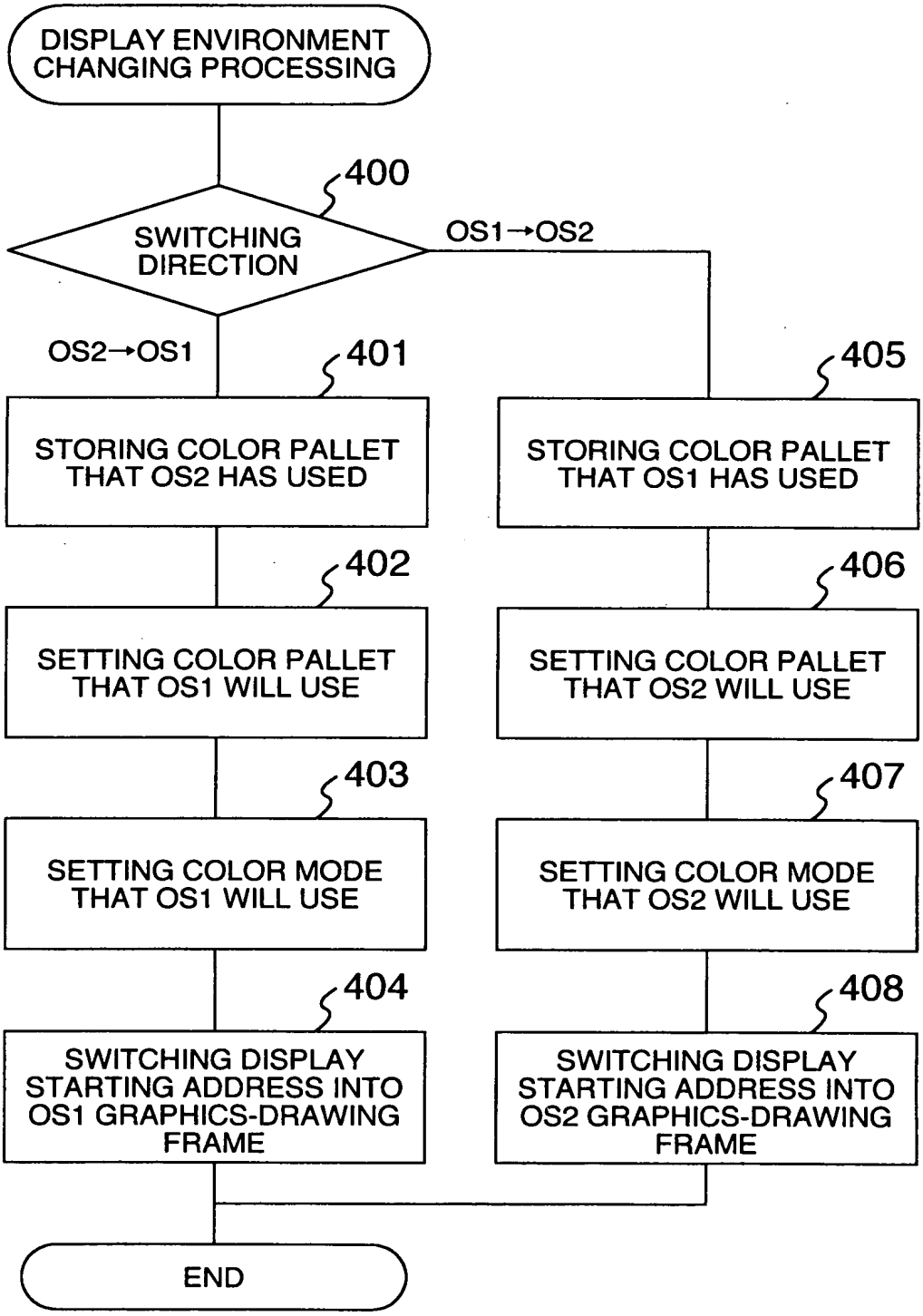

DISPLAY ENVIRONMENT CHANGING PROCESSING
400
SWITCHING DIRECTION
OS1→OS2
OS2→OS1
401
STORING COLOR PALLET THAT OS2 HAS USED
402
SETTING COLOR PALLET THAT OS1 WILL USE
403
SETTING COLOR MODE THAT OS1 WILL USE
404
SWITCHING DISPLAY STARTING ADDRESS INTO OS1 GRAPHICS-DRAWING FRAME
405
STORING COLOR PALLET THAT OS1 HAS USED
406
SETTING COLOR PALLET THAT OS2 WILL USE
407
SETTING COLOR MODE THAT OS2 WILL USE
408
SWITCHING DISPLAY STARTING ADDRESS INTO OS2 GRAPHICS-DRAWING FRAME
END

FIG. 5

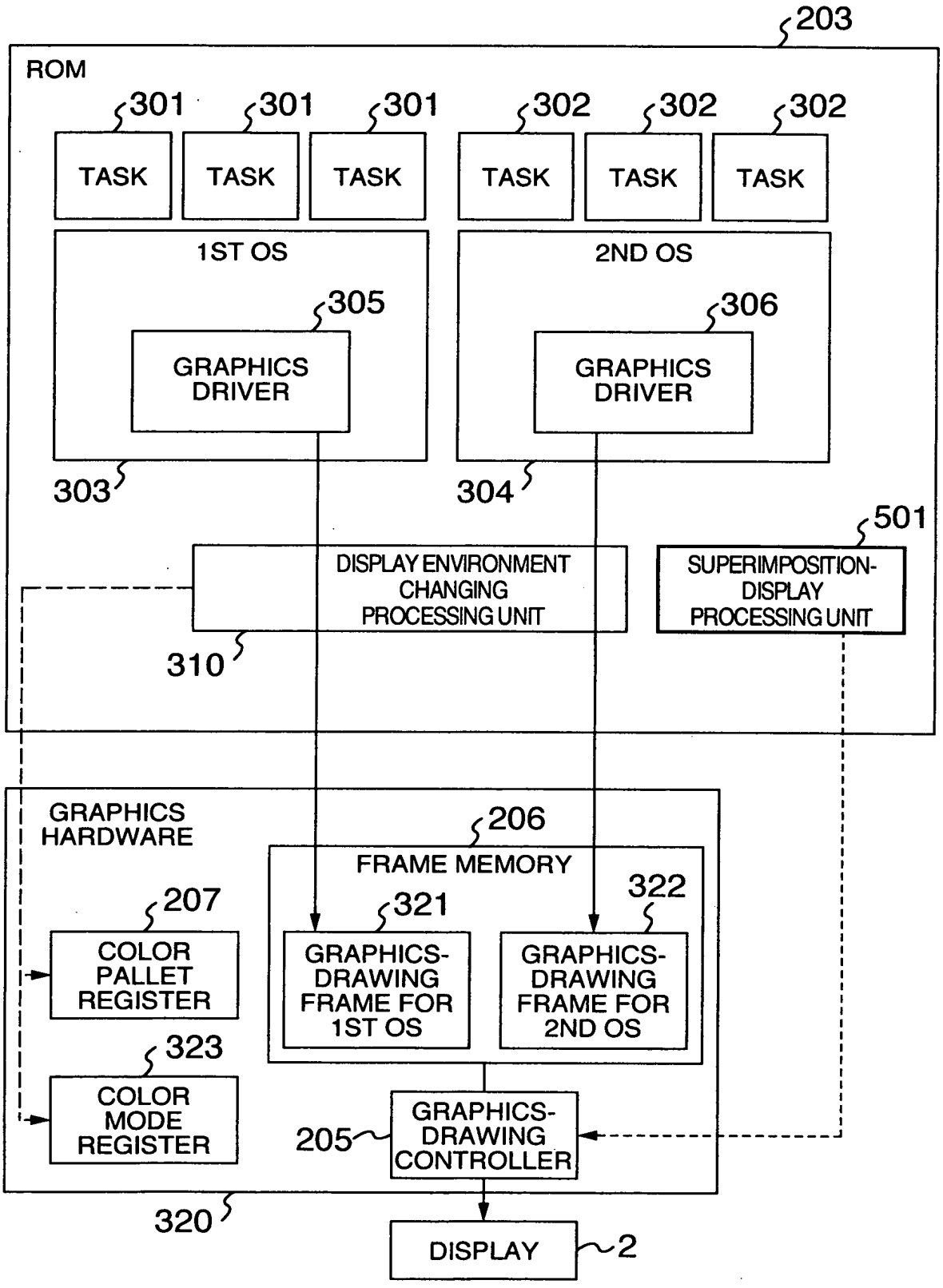

203
ROM
301
301
301
302
302
302
TASK
TASK
TASK
TASK
TASK
TASK
1ST OS
2ND OS
305
306
GRAPHICS DRIVER
GRAPHICS DRIVER
303
304
501
DISPLAY ENVIRONMENT CHANGING PROCESSING UNIT
SUPERIMPOSITION-DISPLAY PROCESSING UNIT
310
GRAPHICS HARDWARE
206
FRAME MEMORY
207
321
322
COLOR PALLET REGISTER
GRAPHICS-DRAWING FRAME FOR 1ST OS
GRAPHICS-DRAWING FRAME FOR 2ND OS
323
COLOR MODE REGISTER
205
GRAPHICS-DRAWING CONTROLLER
320
DISPLAY
2

FIG. 6

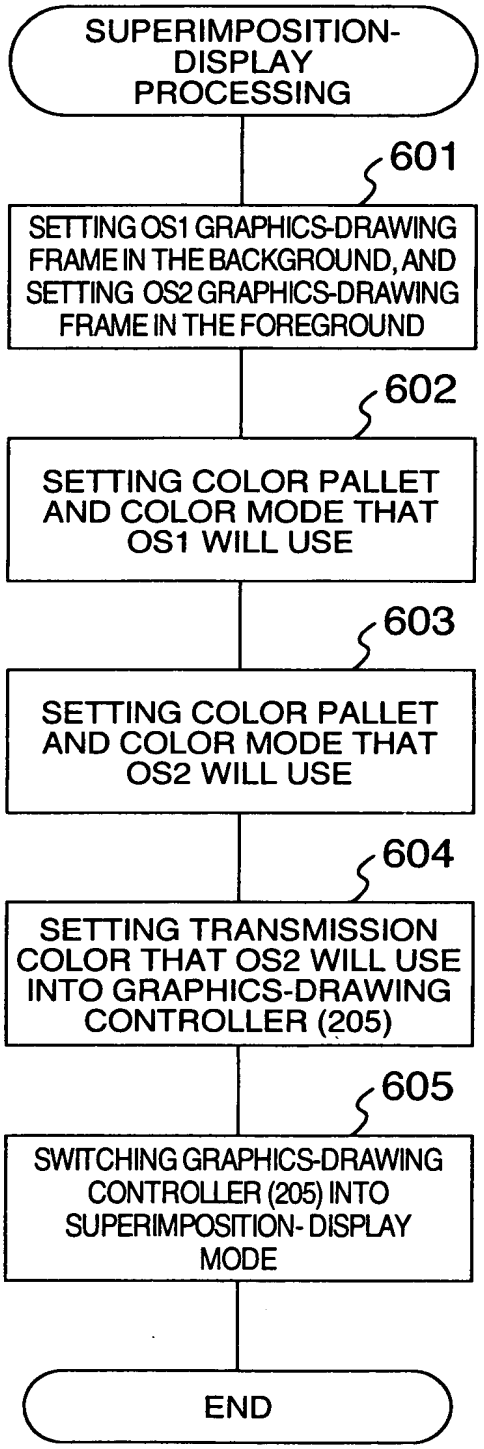

SUPERIMPOSITION-DISPLAY PROCESSING
601
SETTING OS1 GRAPHICS-DRAWING FRAME IN THE BACKGROUND, AND SETTING OS2 GRAPHICS-DRAWING FRAME IN THE FOREGROUND
602
SETTING COLOR PALLET AND COLOR MODE THAT OS1 WILL USE
603
SETTING COLOR PALLET AND COLOR MODE THAT OS2 WILL USE
604
SETTING TRANSMISSION COLOR THAT OS2 WILL USE INTO GRAPHICS-DRAWING CONTROLLER (205)
605
SWITCHING GRAPHICS-DRAWING CONTROLLER (205) INTO SUPERIMPOSITION- DISPLAY MODE
END

FIG. 7

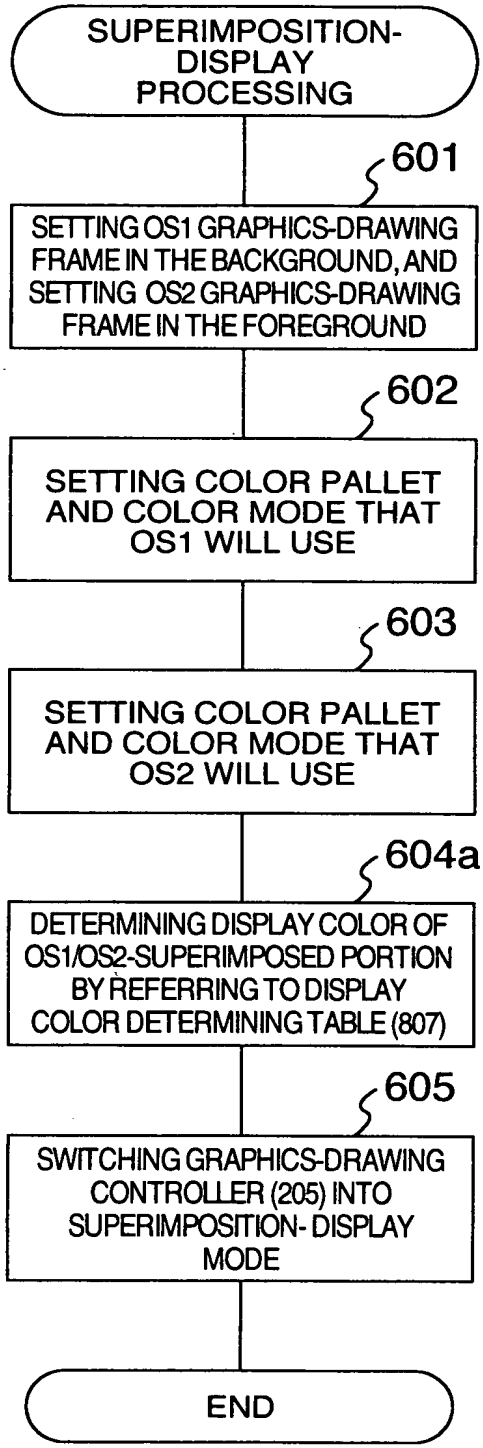
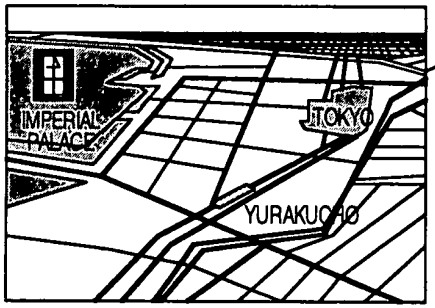

SUPERIMPOSITION-DISPLAY PROCESSING
601
SETTING OS1 GRAPHICS-DRAWING FRAME IN THE BACKGROUND, AND SETTING OS2 GRAPHICS-DRAWING FRAME IN THE FOREGROUND
602
SETTING COLOR PALLET AND COLOR MODE THAT OS1 WILL USE
603
SETTING COLOR PALLET AND COLOR MODE THAT OS2 WILL USE
604a
DETERMINING DISPLAY COLOR OF OS1/OS2-SUPERIMPOSED PORTION BY REFERRING TO DISPLAY COLOR DETERMINING TABLE (807)
605
SWITCHING GRAPHICS-DRAWING CONTROLLER (205) INTO SUPERIMPOSITION- DISPLAY MODE
END

FIG.8A

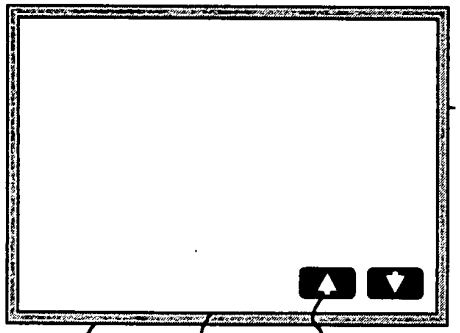
OS1 GRAPHICS-DRAWING FRAME



801

FIG.8B

OS2 GRAPHICS-DRAWING FRAME



802 803 804

FIG.8C

805 COLOR ID	806 DISTRIBUTION VALUE

807

DISPLAY COLOR DETERMINING TABLE

FIG.8D

808

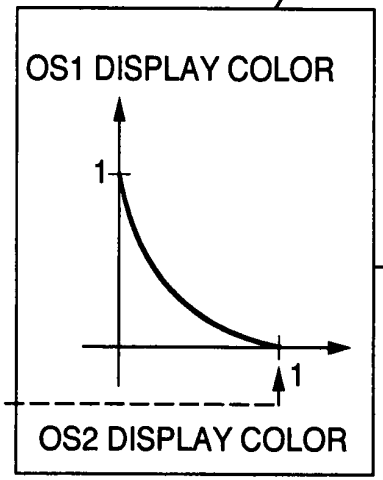
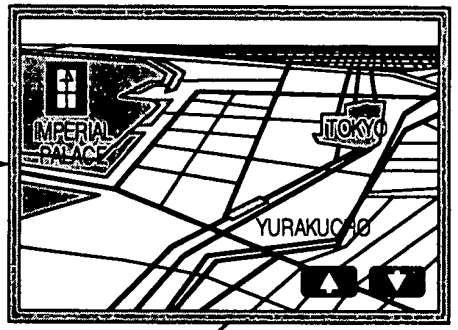


FIG.8E

DISPLAY



809

FIG. 9

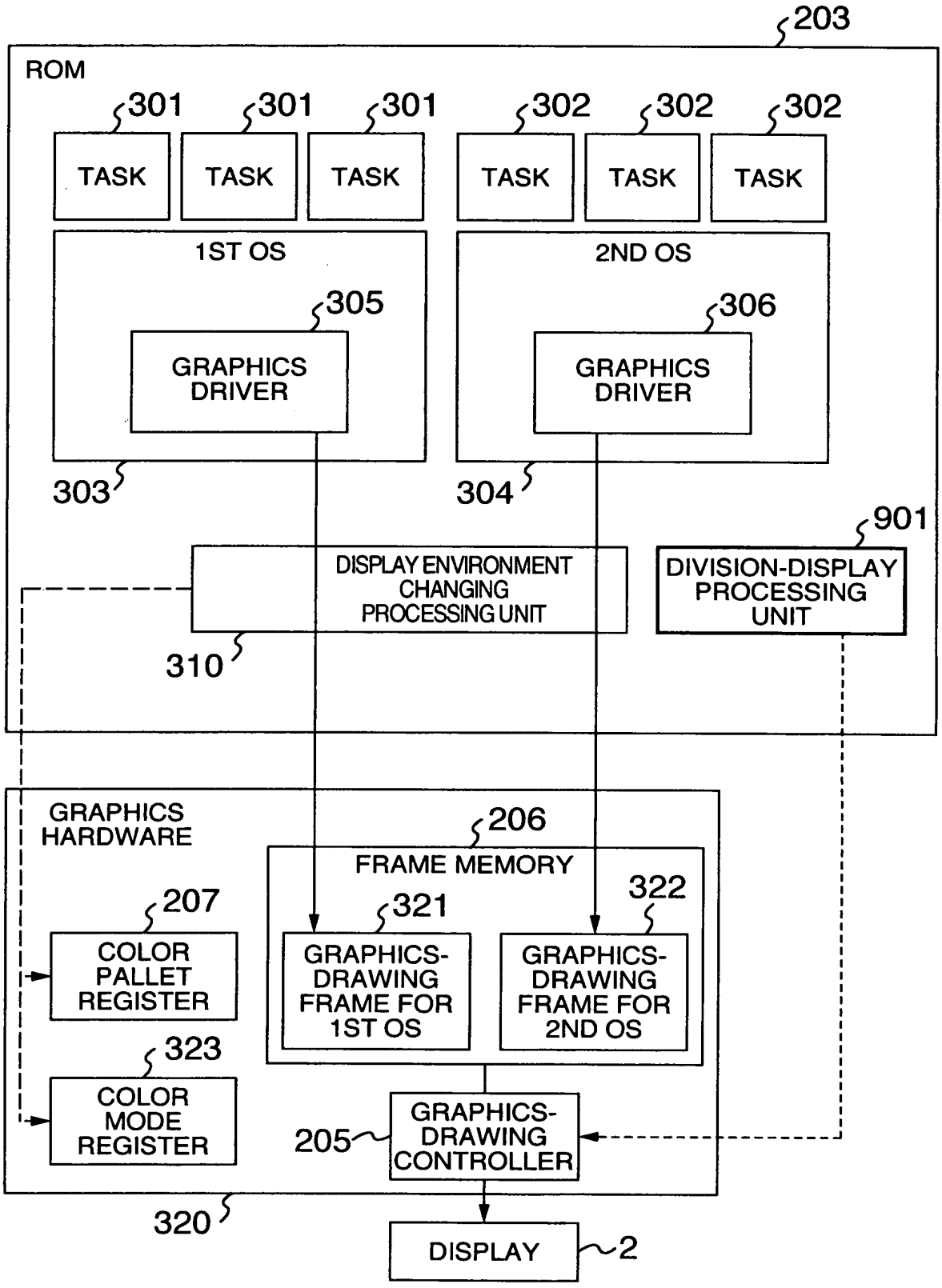

203
ROM
301
301
301
302
302
302
TASK
TASK
TASK
TASK
TASK
TASK
1ST OS
2ND OS
305
306
GRAPHICS DRIVER
GRAPHICS DRIVER
303
304
901
DISPLAY ENVIRONMENT CHANGING PROCESSING UNIT
DIVISION-DISPLAY PROCESSING UNIT
310
GRAPHICS HARDWARE
206
FRAME MEMORY
207
321
322
COLOR PALLET REGISTER
GRAPHICS-DRAWING FRAME FOR 1ST OS
GRAPHICS-DRAWING FRAME FOR 2ND OS
323
COLOR MODE REGISTER
205
GRAPHICS-DRAWING CONTROLLER
320
DISPLAY
2

FIG. 10

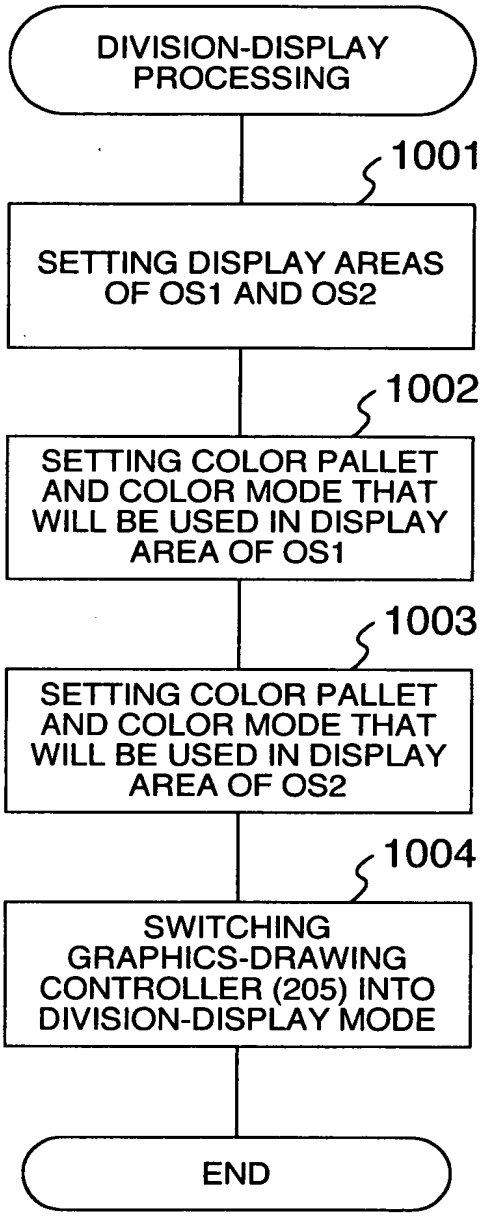

DIVISION-DISPLAY PROCESSING
1001
SETTING DISPLAY AREAS OF OS1 AND OS2
1002
SETTING COLOR PALLET AND COLOR MODE THAT WILL BE USED IN DISPLAY AREA OF OS1
1003
SETTING COLOR PALLET AND COLOR MODE THAT WILL BE USED IN DISPLAY AREA OF OS2
1004
SWITCHING GRAPHICS-DRAWING CONTROLLER (205) INTO DIVISION-DISPLAY MODE
END

FIG. 11

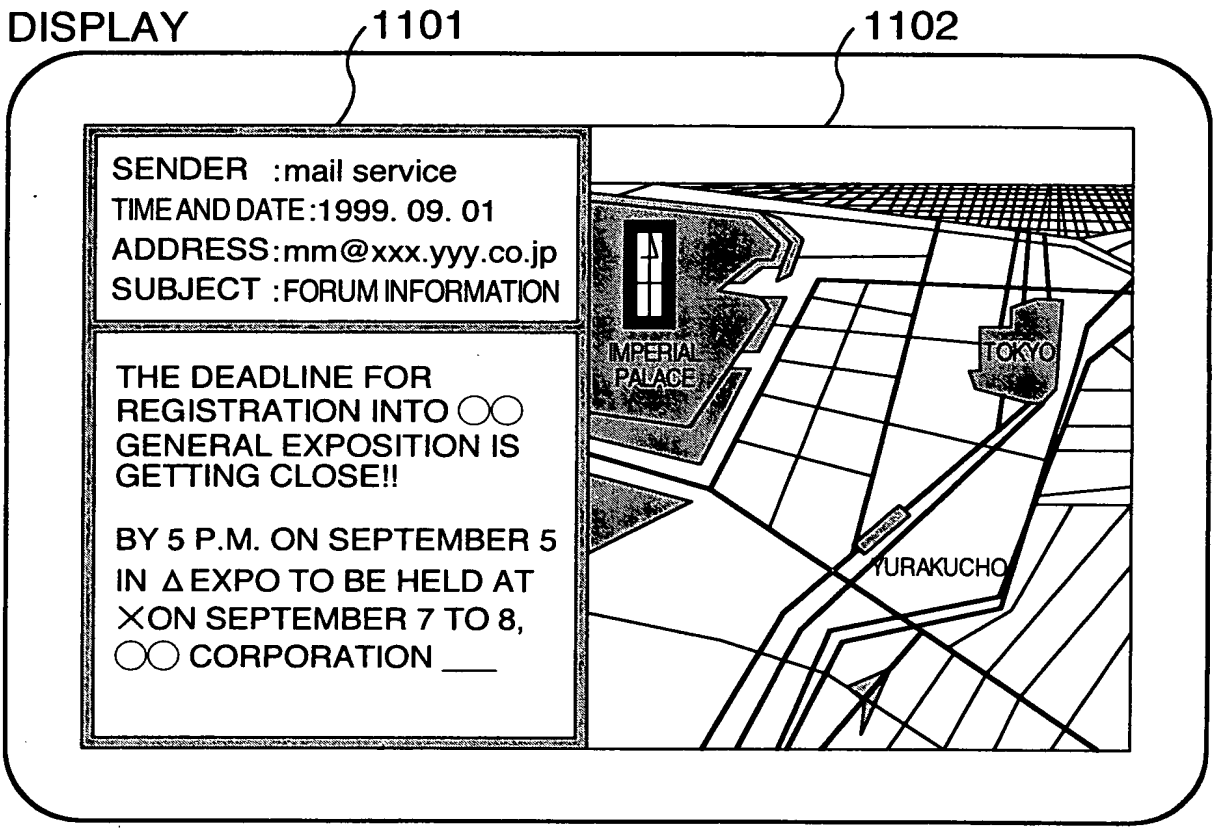

DISPLAY
1101
1102
SENDER :mail service
TIME AND DATE:1999. 09. 01
ADDRESS:mm@xxx.yyy.co.jp
SUBJECT :FORUM INFORMATION
THE DEADLINE FOR REGISTRATION INTO ○○ GENERAL EXPOSITION IS GETTING CLOSE!!
BY 5 P.M. ON SEPTEMBER 5 IN Δ EXPO TO BE HELD AT ×ON SEPTEMBER 7 TO 8, ○○ CORPORATION ___
IMPERIAL PALACE
TOKYO
YURAKUCHO

FIG. 12

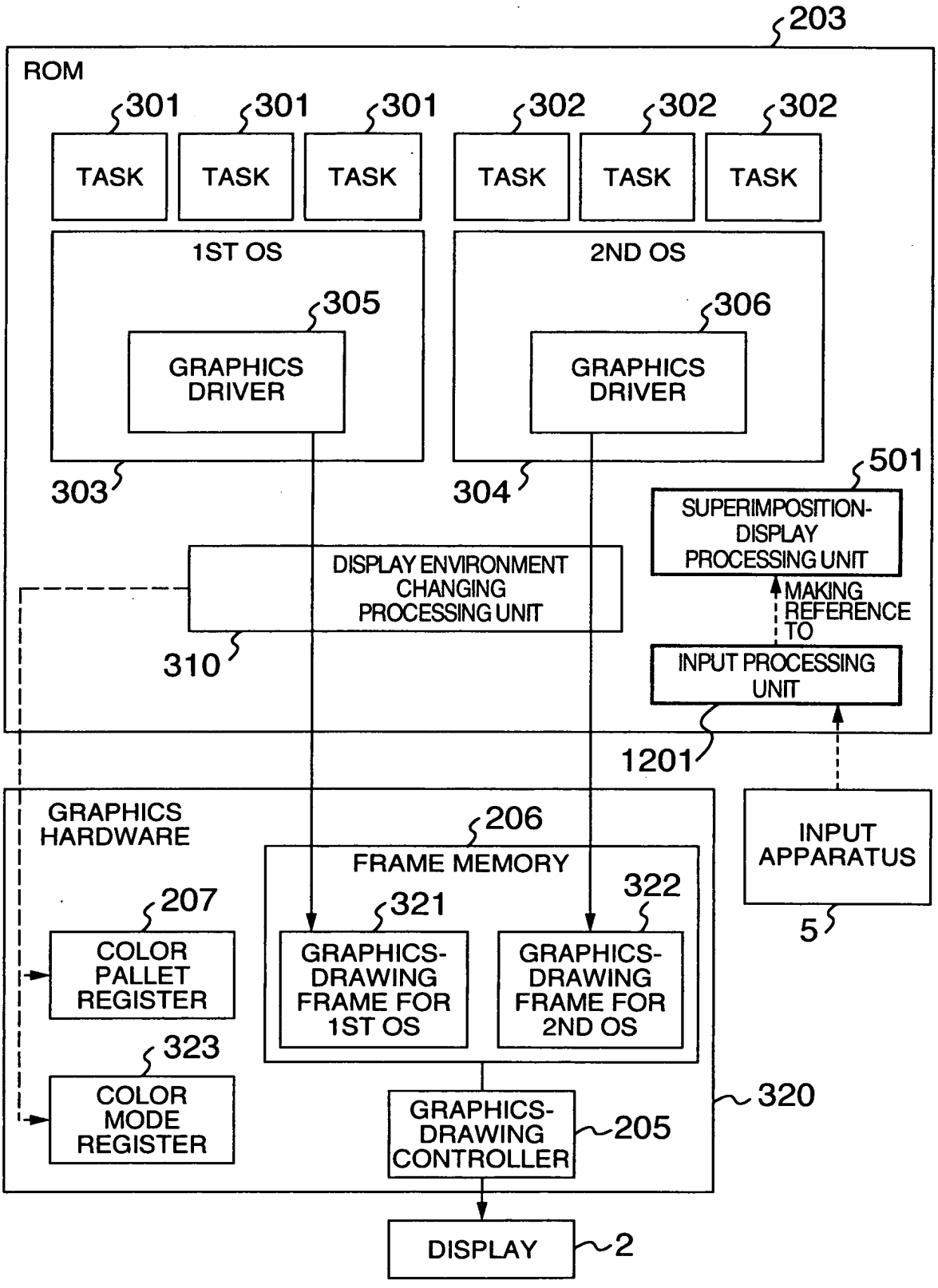

203
ROM
301
301
301
302
302
302
TASK
TASK
TASK
TASK
TASK
TASK
1ST OS
2ND OS
305
306
GRAPHICS DRIVER
GRAPHICS DRIVER
303
304
501
SUPERIMPOSITION-DISPLAY PROCESSING UNIT
DISPLAY ENVIRONMENT CHANGING PROCESSING UNIT
MAKING REFERENCE TO
310
INPUT PROCESSING UNIT
1201
GRAPHICS HARDWARE
206
FRAME MEMORY
INPUT APPARATUS
207
321
322
COLOR PALLET REGISTER
GRAPHICS-DRAWING FRAME FOR 1ST OS
GRAPHICS-DRAWING FRAME FOR 2ND OS
5
323
COLOR MODE REGISTER
320
GRAPHICS-DRAWING CONTROLLER
205
DISPLAY
2

FIG. 13

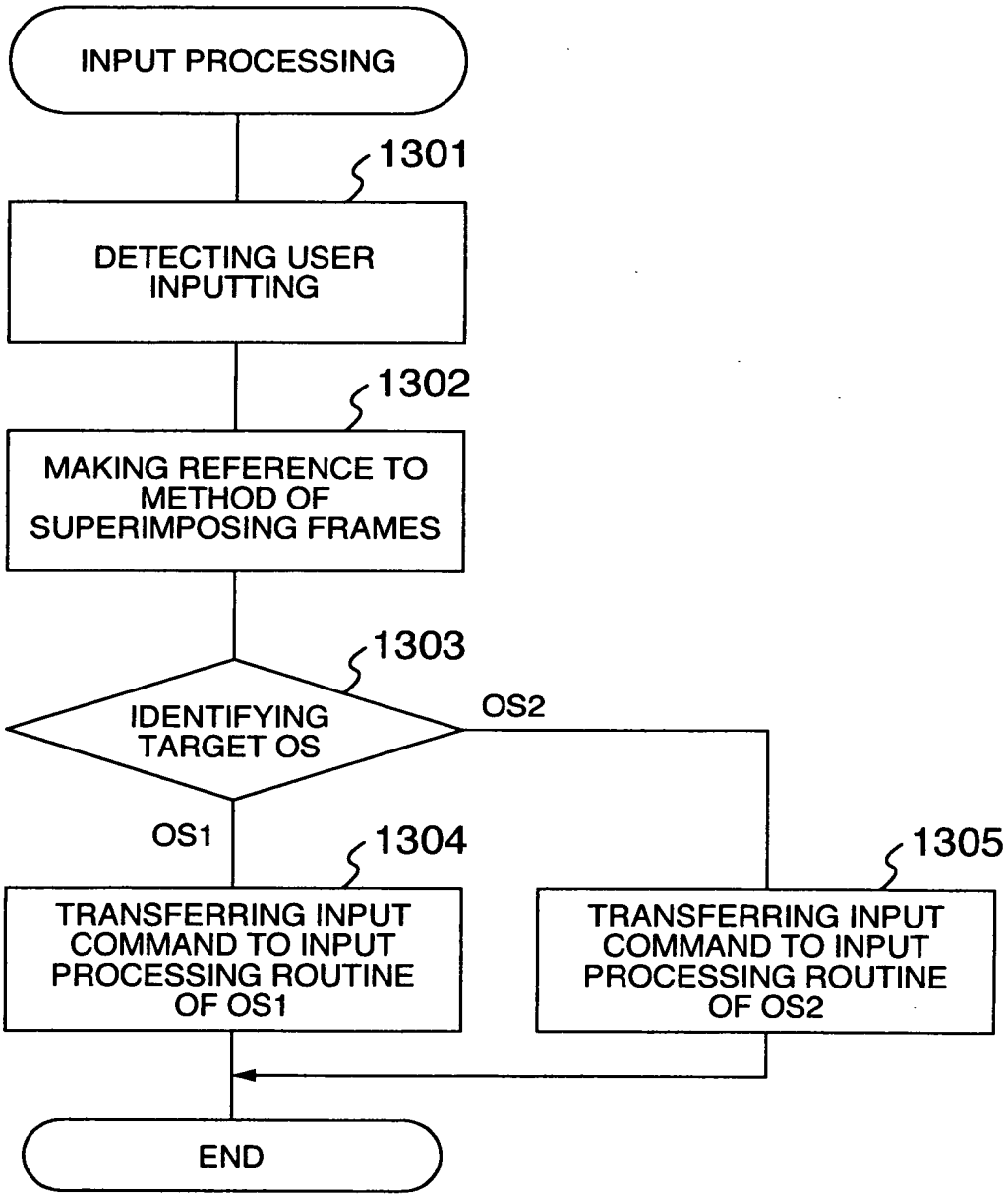
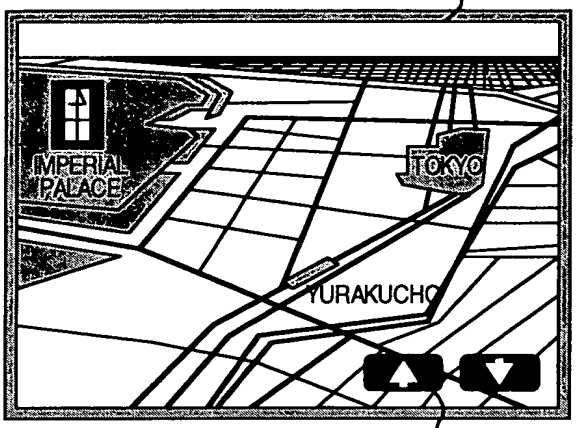
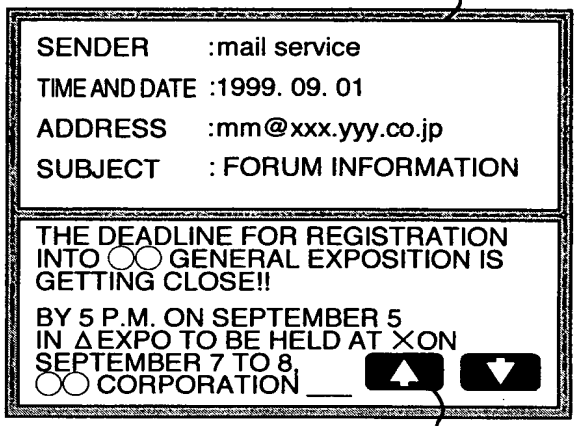

INPUT PROCESSING
1301
DETECTING USER INPUTTING
1302
MAKING REFERENCE TO METHOD OF SUPERIMPOSING FRAMES
1303
IDENTIFYING TARGET OS
OS2
OS1
1304
TRANSFERRING INPUT COMMAND TO INPUT PROCESSING ROUTINE OF OS1
1305
TRANSFERRING INPUT COMMAND TO INPUT PROCESSING ROUTINE OF OS2
END

FIG.14A



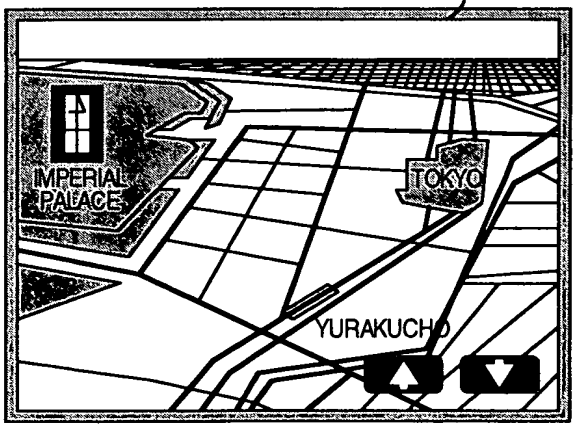
WHEN ▼ IS PUSHED DOWN, TRANSFER INPUT COMMAND TO OS1

FIG.14C



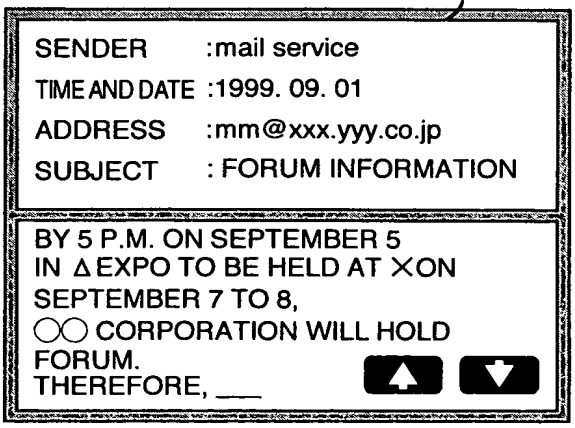
WHEN ▼ IS PUSHED DOWN, TRANSFER INPUT COMMAND TO OS2

FIG.14B



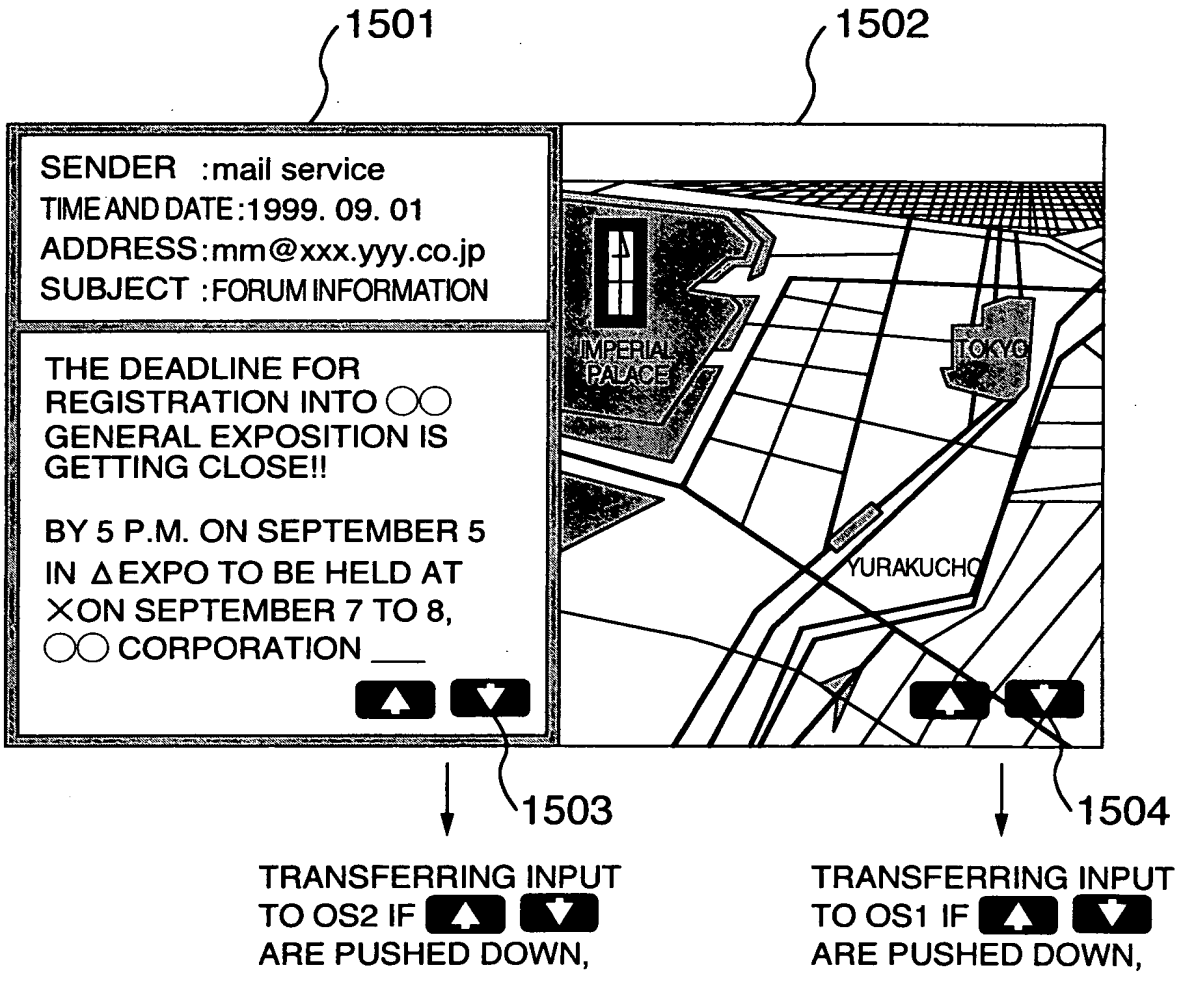
SCROLLING MAP IN DOWNWARD DIRECTION IN OS1

FIG.14D



SCROLLING MAIL IN DOWNWARD DIRECTION IN OS2

FIG. 15


1501
1502
SENDER :mail service
TIME AND DATE:1999. 09. 01
ADDRESS:mm@xxx.yyy.co.jp
SUBJECT :FORUM INFORMATION
THE DEADLINE FOR REGISTRATION INTO ○○ GENERAL EXPOSITION IS GETTING CLOSE!!
BY 5 P.M. ON SEPTEMBER 5 IN ΔEXPO TO BE HELD AT ×ON SEPTEMBER 7 TO 8, ○○ CORPORATION ___
IMPERIAL PALACE
TOKYO
YURAKUCHO
1503
1504
TRANSFERRING INPUT TO OS2 IF ▲ ▼ ARE PUSHED DOWN,
TRANSFERRING INPUT TO OS1 IF ▲ ▼ ARE PUSHED DOWN,